

NAVAL HEALTH RESEARCH CENTER

***EFFECTS OF SAN DIEGO AREA FIRES ON
RESPIRATORY CONDITIONS IN
MILITARY COMMUNITIES
and
SAN DIEGO-BASED MILITARY MANAGES TO
STAY HEALTHY DURING FIRES***

***H. Kleiner
S I. Woodruff
B. P. Murphy***

Report No. 03-31

Approved for public release; distribution unlimited.



**NAVAL HEALTH RESEARCH CENTER
P. O. BOX 85122
SAN DIEGO, CA 92186-5122**

**BUREAU OF MEDICINE AND SURGERY (M2)
2300 E ST. NW
WASHINGTON, DC 20372-5300**



Effects of San Diego Area Fires on Respiratory Conditions in Military Communities
and
San Diego-Based Military Manages to Stay Healthy During Fires

Hillary Kleiner, MPH
Susan I. Woodruff, PhD
Research Epidemiologists
MTS Technologies, Inc.

Brian P. Murphy, DrPH
CDR, MSC, USN

Naval Health Research Center
P O Box 85122
San Diego, CA 92186-5122

2 original articles and 2 published:

(1) "Effects of San Diego Area Fires on Respiratory Conditions in Military Communities"
(pages 1-4).

(1a) Title changed to: "San Diego Sailors stay Healthy during Wild Fires" news article published
by dcmilitary.com, 22 January 2004 (page 6)

(2) "San Diego-Based Military Manages to Stay Healthy During Fires" (page 5)

(2a) Title changed to: "San Diego-Based Military Stays Healthy During October Fires"
published in www.news.navy.mil, 26 Jan 04, story number NNS040126-09 (page 7)

Report No. 03-31, supported by research work unit 63116. The views expressed in these two articles are those of the authors and do not reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government. Approved for public release; distribution unlimited. This research has been conducted in compliance with all applicable Federal Regulations governing the protection of human subjects in research.

Original write-up.

Effects of San Diego Area Fires on Respiratory Conditions in Military Communities

Beginning October 26, 2003, San Diego County and surrounding areas experienced the worst firestorm in 33 years. The blazing flames forced entire communities to shut down and evacuate. After having burned for 9 days, the fires had destroyed approximately 3,587 homes and charred more than 800,000 acres of land. Roughly 80,000 people were displaced from their homes, and the death toll was 22. Authorities closed all schools and universities, and recommended employers allow employees to remain at home. All military bases were closed, asking only crucial employees (e.g., commanding officers, medical personnel, and police) to report to work.

Smoke from wildfires contains tiny particles, gases, and water vapor. The tiny particles that are breathed in build up in the respiratory tract, causing painful and difficult breathing, feelings of heavy and tight chests, headaches, sore throats, itching and burning eyes, sneezing, and coughing. Existing conditions (e.g., asthma and other respiratory diseases) are exacerbated, putting those individuals at increased risk for infections. By-products of burning buildings (e.g., asbestos and plastics) contribute to the smoke's toxicity. During the fires, experts from the local Air Pollution Control District recommended that people refrain from doing activities that increase their rate of breathing, either inside or outside. At the peak of the fires, Air Quality Index (AQI) readings exceeded 200, (i.e., very unhealthy) in many San Diego County locations. Never before had San Diego County's air quality been so harmful.

Because the fires caused such hazardous breathing conditions, increases in respiratory problems were a concern for the military health care community. Outpatient medical visits to hospitals and clinics in two large military catchment areas were examined to assess unusual increases in respiratory conditions. Camp Pendleton and San Diego military treatment facilities (MTFs) serve approximately 300,000 active-duty service members (primarily Navy and Marine Corps), retirees, family members, and recruits. The Medical Data Surveillance System (MDSS), a passive surveillance system that monitors health conditions using automated medical encounter records, was used to assess unusual increases in respiratory conditions. MDSS outpatient visits

at MTFs in both catchment areas were examined for the period of October 18, 2003 (approximately 1 week preceding the fires) through November 4, 2003 (approximately 1 week following the fires) to determine if an unusual increase in respiratory complaints occurred as a result of the fires.

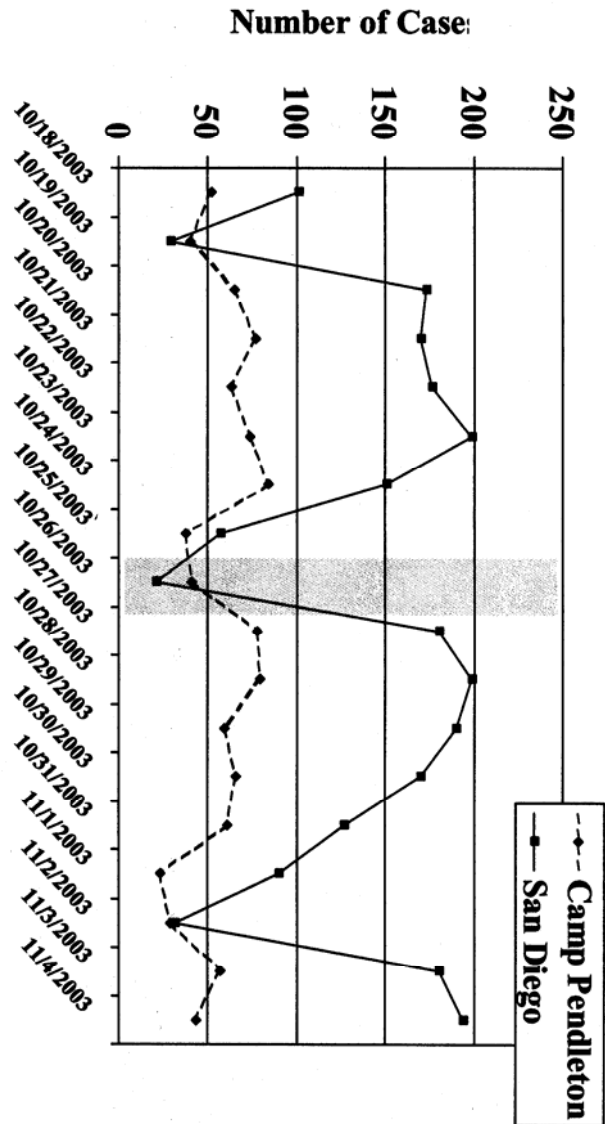
Figure 1 shows the number of respiratory outpatient visits for several days preceding and following the onset of wildfires in both catchment areas. The start of the wildfires in the San Diego area is shown as a bar on October 26, 2003 (although technically the fires began on October 21, 2003, in San Bernardino, CA). Unexpectedly, the number of respiratory cases being reported for the days during the fires was no higher than usual. The number of respiratory cases during the days before and after the fires began were approximately the same in the two areas. On workdays prior to the fires, (October 20-24, 2003) the number of respiratory visits ranged from 65 to 200. Similarly, on workdays immediately following the beginning of the fires (October 27-31, 2003), respiratory visits ranged from 43 to 199. Typical weekend decreases were seen in both areas. Because children and the elderly are at increased risk for respiratory problems, they were examined separately. The same general pattern was seen as shown in Figure 1 (see page 4), demonstrating no unusual increases in respiratory cases for these high-risk groups (data not shown).

This lack of an increase in respiratory cases was surprising, although positive from a public health perspective. Local authorities closed schools, and businesses were encouraged to allow their employees to stay at home. Individuals, including children, were asked to refrain from physical and outdoor activities, limiting inhalation of polluted air. For these reasons individuals may have remained indoors, thereby reducing or avoiding respiratory problems. Individuals with asthma or other chronic respiratory illnesses likely took precautions, and had medications on hand to treat their symptoms. As a group, the beneficiary population served by these MTFs is young and relatively healthy and therefore may have been able to tolerate the adverse conditions. Although one would expect to see increases in respiratory problems with fires so severe, these outpatient data demonstrated that respiratory conditions were not unusually high among active-duty military personnel, retirees, and their families during and following the wildfires, at least in the short term. The most severe cases may have presented to emergency rooms, which our data collection would not have captured. However, local civilian health and emergency medical

officials reported fewer emergency room visits than they had expected, another indication that people in the area were paying attention to the warnings, taking precautions, and avoiding respiratory problems.

References available from the authors

Fig 1. Respiratory Outpatient Visits in Two Large Catchment Areas



Original write-up.

San Diego-Based Military Manages to Stay Healthy During Fires

Beginning October 26, 2003, San Diego County and surrounding areas experienced the worst firestorm in 33 years. The blazing flames forced entire communities to shut down and evacuate. After having burned for nine days, the fires had destroyed approximately 3,587 homes and charred more than 800,000 acres of land. Roughly 80,000 people were displaced from their homes, and the death toll was 22. Authorities closed all schools and universities, and recommended employers allow employees to remain at home. All military bases were closed, asking only crucial employees (e.g., commanding officers, medical personnel, and police) to report to work. The fires produced massive amounts of smoke and ash, which can exacerbate asthma and other respiratory conditions, as well as aggravate healthy lungs and throats.

Because the fires caused such hazardous breathing conditions, increases in respiratory problems were a concern for the military health care community. Outpatient medical visits to hospitals and clinics in two large military catchment areas were examined to assess unusual increases in respiratory conditions. Camp Pendleton and San Diego medical treatment facilities (MTFs) serve approximately 300,000 active-duty service members (primarily Navy and Marine Corps), retirees, family members, and recruits. The Medical Data Surveillance System (MDSS), a passive surveillance system that monitors health conditions using automated medical encounter records, was used to assess unusual increases in respiratory conditions. MDSS outpatient visits at MTFs in both catchment areas were examined for the period of October 18, 2003 (approximately 1 week preceding the fires) through November 4, 2003 (approximately 1 week following the fires) to determine if an unusual increase in respiratory complaints occurred as a result of the fires. Data demonstrated that short-term respiratory conditions were not unusually high among active-duty military personnel, retirees, and their families during and following the wildfires.

Results suggest that individuals heeded advice, took precautions, and remained indoors, thereby reducing or avoiding short-term respiratory problems. In addition, the beneficiary population served by these MTFs is young and relatively healthy, and therefore may have been able to tolerate the adverse conditions. These findings are positive from a military health care perspective.



News and information for National Naval Medical Center

personnel | [News archives](#)

[The Journal](#) >> [National News](#) | [Commentary](#) | [Features](#) | [Health](#) |

January 22, 2004

San Diego Sailors Stay Healthy During Wild Fires

by Naval Health Research Center Public Affairs

SAN DIEGO -- During nine days in October 2003, San Diego County and surrounding areas experienced the worst firestorms in 33 years. The blazing flames forced entire communities to shut down and evacuate. The fires destroyed more than 3,500 homes and charred over 800,000 acres. Nearly 80,000 people were displaced and 22 people died.

The fires produced massive amounts of smoke and ash, which can exacerbate asthma and other respiratory conditions and aggravate healthy lungs and throats.

"Because the fires caused such hazardous breathing conditions, increases in respiratory problems were a concern for the military health care community," said Hillary Kleiner and Susan Woodruff, research epidemiologists at the Naval Health Research Center (NHRC).

The researchers were interested in finding out if there was an unusual increase in respiratory conditions as a result of the fires. To track the impact, outpatient medical visits at area Camp Pendleton and San Diego medical treatment facilities (MTFs) were evaluated using the Medical Data

Surveillance System (MDSS).

MDSS is a medical surveillance system that monitors health conditions using automated medical encounter records. These MTFs serve approximately 300,000 active-duty service members, retirees, family members and recruits.

Outpatient visits at area MTFs were examined for the period of Oct. 18, 2003, one week preceding the fires, through Nov. 4, 2003, one week following the fires. Typically, 9,000 visits per week occur at the area MTFs, about 15 percent for respiratory illness.

Data demonstrated that short-term respiratory conditions were not unusually high among active-duty military personnel, retirees, and their families during and following the fires, the researchers reported.

They went on to add that the results suggest that individuals heeded advice, took precautions, and remained indoors, reducing or avoiding short-term respiratory problems. They both agree these findings are positive from a military health care perspective.

NHRC is a strategically-positioned forward Bureau of Medicine and Surgery laboratory that supports fleet operational readiness through research, development, test, and evaluation on the biomedical and psychological aspects of the Navy and Marine Corps. Most of the work conducted at the laboratory is in the advanced development stage of the research or evaluation process and requires close and continuous interaction with operational units of the Navy and Marine Corps.



The Source for Navy News

www.news.navy.mil

San Diego-Based Military Stays Healthy During October Fires

Story Number: NNS040126-09

1/26/2004

From Naval Health Research Center Public Affairs

SAN DIEGO (NNS) -- Data from a study researchers at the Naval Health Research Center (NHRC) conducted in November demonstrated that short term respiratory illnesses were not unusually high among active-duty military personnel, retirees, and their families during and following the San Diego fires in October.

"Because the fires caused such hazardous breathing conditions, increases in respiratory problems were a concern for the military health care community," said Hillary Kleiner and Susan Woodruff, research epidemiologists NHRC.

The researchers were interested in finding out if there was an unusual increase in respiratory conditions as a result of the fires. To track the impact, outpatient medical visits at all Camp Pendleton and San Diego medical treatment facilities (MTFs) were evaluated using the Medical Data Surveillance System (MDSS).

MDSS is a medical surveillance system that monitors health conditions using automated medical encounter records. These MTFs serve approximately 300,000 active-duty service members, retirees, family members and recruits.

"Outpatient visits at area MTFs were examined for the period of Oct. 18 (one week preceding the fires) through Nov. 4 (one week following the fires). Typically, 9,000 visits per week occur at the area MTFs, about 15 percent are for respiratory illness," the researchers reported.

They went on to add that the results suggest that individuals heeded advice, took precautions and remained indoors, reducing or avoiding short-term respiratory problems. They both agree these findings are positive from a military health care perspective.

During nine days in October, San Diego County and surrounding areas experienced the worst firestorms in 33 years. The blazing flames forced entire communities to shut down and evacuate. The fires destroyed more than 3,500 homes and charred more than 800,000 acres. Nearly 80,000 people were displaced and 22 people died. The fires produced massive amounts of smoke and ash, which can exacerbate asthma and other respiratory conditions and aggravate healthy lungs and throats.

NHRC is a strategically positioned forward Bureau of Medicine and Surgery laboratory that supports fleet operational readiness through research, development, test, and evaluation on the biomedical and psychological aspects of the Navy and Marine Corps. Most of the work conducted at the laboratory is in the advanced development stage of the research or evaluation process, and requires close and continuous interaction with operational units of the Navy and Marine Corps.

For more news from around the fleet, visit the Navy NewsStand at www.news.navy.mil.

REPORT DOCUMENTATION PAGE

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB Control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. Report Date (DD MM YY) 12-02-03		2. Report Type Report and News article		3. DATES COVERED (from - to) Nov 2003	
4. TITLE AND SUBTITLE ¹ Effects of San Diego Area Fires on Respiratory Conditions in Military Communities <u>and</u> ² San Diego-Based Military Manages to Stay Healthy During Fires				5a. Contract Number: GS09K99BHD005 5b. Grant Number: 5c. Program Element: 06030729N 5d. Project Number: 09162 5e. Task Number: 9T3SSS025D 5f. Work Unit Number: 63116	
6. AUTHORS Hillary Kleiner, MPH, Susan I. Woodruff, PhD, CDR Brian P. Murphy, MSC, USN				9. PERFORMING ORGANIZATION REPORT NUMBER Report No. 03-31 10. Sponsor/Monitor's Acronyms(s) 11. Sponsor/Monitor's Report Number(s)	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Health Research Center P.O. Box 85122 San Diego, CA 92186-5122					
8. SPONSORING/MONITORING AGENCY NAMES(S) AND ADDRESS(ES) Chief, Bureau of Medicine and Surgery Code M53 2300 E St NW Washington DC 20372-5300					
12 DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES title changes, published in: ¹ San Diego Sailors stay Healthy during Wild Fires" news article published by dcilitary.com , 22 January 2004; ² Title changed to: "San Diego-Based Military Stays Healthy During October Fires" published in www.news.navy.mil , 26 Jan 04, story number NNS040126-09					
14. ABSTRACT (maximum 200 words) This brief paper describes the effects of the recent San Diego area wildfires on outpatient respiratory visits to local military medical treatment facilities (MTFs). Beginning October 26, 2003, San Diego County and surrounding areas experienced the worst firestorm in 33 years. The fires produced massive amounts of smoke and ash, which can exacerbate asthma and other respiratory conditions, as well as aggravate healthy lungs and throats. Using the Medical Data Surveillance System (MDSS), a passive surveillance tool that monitors health conditions using automated medical encounter records, outpatient medical visits at hospitals and clinics in two large military catchment areas were examined to assess unusual increases in respiratory conditions. Camp Pendleton and San Diego MTFs serve approximately 300,000 active-duty service members (primarily Navy and Marine Corps), family member, recruits, and retirees. Analysis of outpatient visits several days before and after the fires began showed that the number of respiratory cases was not unusually high as a result of the fires, at least in the short term. Results suggest that individuals heeded advice, took precautions, and remained indoors, thereby reducing or avoiding short-term respiratory problems.					
15. SUBJECT TERMS Medical surveillance, epidemiology, respiratory illness					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UNCL	18. NUMBER OF PAGES 7	19a. NAME OF RESPONSIBLE PERSON Commanding Officer
a. REPORT UNCL	b. ABSTRACT UNCL	b. THIS PAGE UNCL			19b. TELEPHONE NUMBER (INCLUDING AREA CODE) COMM/DSN: (619) 553-8429